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THE UNIVERSITY OF ALBERTA

THE SERIAL EFFECTS OF THE WECHSLER ADULT INTELLIGENCE SCALE AND RORSCHACH ADMINISTRATIONS WITH STUDENT NURSES

By

© RICHARD JOHN WALKLEY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "The Serial Effects of the Wechsler Adult Intelligence Scale and Rorschach Administrations with Student Nurses" submitted by Richard John Walkley in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

The purpose of the present investigation was to examine the influence of a WAIS adminstration upon certain variables of a subsequently administered Rorschach; and conversely, to examine the influence that a Rorschach administration may have had upon certain subtest scores of a subsequently administered WAIS.

The subjects were 36 student nurses, each of whom was randomly placed into experimental or control group (N=18). At the first testing session, both groups were administered the Rorschach followed by the WAIS. At the second session, after an interval of four months, the experimental group received the reverse order of test administration (that is, WAIS - Rorschach), while the control group received the order of the first session. An analysis of covariance tested the differences in posttest scores (the pretest scores taken as the covariate) between the experimental and control groups, the differences assumed to be a function of the previously administered test. The acceptable level of significance was set at .05.

The results indicated that a Rorschach administered just prior to a WAIS significantly lowered the raw scores on both the Comprehension and Digit Span subtests. The same effect on the Similarities subtest was noted, but the difference did not reach the acceptable level of significance.

The results also indicated that a previously administered WAIS did not significantly influence any of the following Rorschach variables: number of responses; percentage of responses to cards VIII, IX, and X; number of response categories; percent from responses; number of popular responses to color cards; percent human movement responses; percent animal movement responses; percent colour responses; and, percent vista responses.

It was concluded, therefore, that the Rorschach influenced the WAIS results, but the WAIS did not effect the Rorschach. It was speculated that anxiety may be the underlying factor in Rorschach - WAIS interference, and recommended that the WAIS should precede the Rorschach in the organization of clinical test batteries.

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CHAPTER I

INTRODUCTION

While the literature and research on psychological tests and testing is rapidly expanding, relatively little attetnion has been directed to the matter of the order of tests within any given test battery. Recent studies have pointed out the significant effects that situational and interpersonal variables may have upon the results of both unstructured and structured tests. Consequently, competent psychologists have made appropriate efforts to control against the intrusion of such variables. If it can be demonstrated that the experience of taking one psychological test significantly influences performance on subsequent tests, the order of tests within a battery must then be regarded as an important situational variable and should be taken into account when test protocols are being interpreted. If intrusion effects of test order are demonstrated, psychologists will have to more carefully standardize the order of presentation of tests within batteries, depending upon which administration sequence presents the least interference.

The present study was an attempt to provide additional insight into the nature of the serial effects within clinical test batteries, that is, to demonstrate that the experience of taking one psychological test can influence the

results of a subsequently administered test. The specific aims were twofold: First, to demonstrate the intrusion effect the Wechsler Adult Intelligence Scale (WAIS) may have upon the responses to a subsequently administered Rorschach; and, second, to replicate, in essence, the Grisso and Meadow (1967) study examining the intrusive effect the Rorschach may have upon responses to certain subtests of the WAIS. The design of the present study was slightly different than that used by Grisso and Meadow.

LIMITATIONS OF STUDY

Practical considerations dictated that the present study be limited to an investigation of the serial effects with a test battery made up of only two clinical instruments, the Wechsler Adult Intelligence Scale and the Rorschach. It is recognized that such effects may exist for other instruments as well.

A further limitation involved the fact that all subjects were selected from a relatively normal population. That a significantly different set of serial effects may occur in clinical settings is noted.

For this study, virtually no time passed between the administration of the two tests in one session. Therefore, the findings shed no light on the question of how much time must pass between the administration of the WAIS and Rorschach so that serial effects are negligible.

CHAPTER II

BACKGROUND AND REVIEW OF RELATED LITERATURE

I BACKGROUND

To study the effects of situational variables upon test performance involves consideration of perceptual theory. Perception is an area in which mush is still unknown but as man has searched to know himself and his world, some "axioms" of perception have been delineated (Nettler, 1969). Four such axioms are particularly relevant to the present study.

Firstly, it is postulated that there is no one-to-one correspondence between the physical nature of the external stimulus and the experience it arouses in the organism. It appears that the effects of a stimulus are determined by: (1) the physical nature of the stimulus; (2) the stimulus's place among other stimuli; and, (3) "internal conditions" of the receptor.

Secondly, it is apparent that perception is affected by familiarity, that is, the frequency of the organism's previous experience with a stimulus.

When the external field of stimulation is very complex (that is, ambiguous or not well structured), the organism's anticipations play an important part in determining perception. These anticipations may be transient,

a function of fluctuating needs and associations, or they may be relatively enduring as functions of values, attitudes, or personality traits. The important point is that perception is always a function of a prepared organism, an organism that is triggered. This "readiness" may be something of which the organism is not immediately aware at the moment of perception (such as attitudes, values). On the other hand, the organism may be made aware as readiness is consciously induced. That transient states and changing needs affect perception is the third important axion.

Perceptual experience, then, appears usually to depend upon relationships such as memory, affect, self-concept, and sensory appreciation. The fourth axiom of perception simply states that these "systems" of relationships tend to become organized or "structured" into interdependent wholes or patterns called "frames of reference."

That it is important for the clinician in the test situation to understand these axioms of perception is obvious. Rapaport, Gill, and Schafer (1946) have integrated and summarized these fundamental rules as applied to the Rorschach situation:

> It is clear now that no sensory stimulation falls on an empty, passive receptive-organ but that all stimuli are taken in by a complicated receiving-system; and that this receiving-system is structured and directed by basic needs and interests of the organism,

> modified by experience long past and "set" by experiences of the recent past. ... all perception is recognized to be an action of the total psyche, and elaboration of "pure sensory experience ... (p. 89).

These authors further stated that:

> When a familiar object is seen from a familiar view, well-established memories play the prominent role in quick recognition; as perceptual material becomes more unfamiliar ... concept formation becomes important in establishing differences and similarities; and finally, it appears that under difficult conditions a shift from attention to concentration must occur, and that the guidance of both organization and interpretation by the subject's own anticipations -- i.e., expectations -- also becomes prominent. These anticipations vary from those determined by a context or "setting" to more subjective ones (p. 90).

The central theme of Rapaport's discussion is that perceptual sets, whether conscious or unconscious, greatly influence the organism's perception of the Rorschach inkblots.

Masling (1960), in his excellent review of the literature on the influences of situational and interpersonal variables in projective testing, illustrated the importance of perceptual set. He categorized relevant studies under various headings, one of which was concerned with the influences of the testing situation itself. Under this heading, he referred to studies concerned with the interference effects of stress, drugs, hypnosis, and special perceptual

training and experience. Most of the studies cited indicated that situational variables do influence the projective protocol. Masling concluded that, "there is considerable evidence that subjects in an unstructured situation will utilize *all available cues* to complete their assigned task" (p. 81). It is clear, therefore, that one available and important cue might well be supplied by a psychological teat just taken.

II RELATED THEORY AND CLINICAL OPINION

If it were demonstrated that the ordering of tests within a test battery can itself act as an intruding situation variable, the battery would have to be arranged so that minimum contamination of results occurred. While each clinician may have his own rationale for the ordering of tests, the issue in question has largely been ignored in practice. There are, however, some theoretical viewpoints on the matter.

In Piotrowski's (1958) view, "the Rorschach should always precede the more formal, impersonal, and objective intelligence tests" (p. 79). He explained that optimal performance on intelligence tests demands good intellectual self-control and attentiveness to the externally imposed tasks. If the intelligence test precedes the Rorschach, the established perceptual set (that is, the rational, objective, and impersonal set) will inhibit the subject's

imagination and thereby yield a less meaningful Rorschach record. Piotrowski's own test battery consisted of free drawings, followed by the Rorschach, and concluded with a few subtests of the WAIS.

Brown (1958) also preferred the administration of the Rorschach prior to the WAIS. He advocated a sequence which progresses with relation to the degree of intensity of the interaction between the subject and the examiner. The WAIS, requiring a more intense examiner-subject interaction, is placed after the Rorschach.

Although Brown did not directly discuss the possibility of test interference, his view of test sequence was similar to that of the present author. Based on this author's psychometric experience, the more time the subject spends with the examiner, the more the "plastic facade" of the latter will break down. As a result, interpersonal variables will become increasingly important in the test situation and gradually more intrusive.

In contrast, L'Abate (1964) supported the administration of the WAIS before the Rorschach. He suggested a three-stage sequence for test batteries: (1) simple innocuous tests (such as the Bender-Gestalt) which constitute the "ice-breaking" stage. The purpose of this phase is to allay the subject's initial anxiety and increase his feelings of ease and comfort in the situation; (2) more complex,

informative tests (such as the WAIS). This stage is devoted to obtaining more detailed responses from the subject; (3) tests liable to create anxiety (such as the Rorschach or Thematic Apperception Test (TAT)). L'Abate (1964) stated the rationale for such an ordering as follows:

> (a) Certain projective techniques, especially TAT-like figures and Rorschach, are more ambiguous and perhaps more difficult and threatening than any other test materials.
>
> (b) If the patient becomes very upset, refusing to cooperate or even interrupting the evaluation, already valuable information has been gathered.
>
> (c) If these tests are upsetting to the patient, the anxiety thus provoked will not carry over subsequent tests because by then the evaluation will be practically over (p. 177).

Another theoretical rationale forwarded by Holt and Havel (1960) and Schafer (1954) argues in favor of a WAIS - Rorschach order of administration. These authors predicted that the Rorschach, as an unstructured test stimulus, might produce more regressive, autistic, and impulsive thinking which may carry over to subsequent performance on the WAIS. The WAIS scores would be impaired since the intelligence test requires more selective, adaptive, reality-oriented responses for optimal performance.

It was interesting to note that, by similar reasoning, Piotrowski (1958) reached the opposite conclusion, favoring a Rorschach - WAIS ordering. From yet another point of view,

Grisso and Meadow (1967) have suggested that it is questionable whether regressive, impulsive thought process tendencies could persist long enough to contaminate WAIS results. This all indicates the confusion among theoreticians while empirical validation is generally lacking.

A final point concerns motivational considerations. It is at least intuitively apparent that the Rorschach might produce a persisting lower level of motivation since, unlike the WAIS, it presents no clear criteria for successful performance. Therefore, it would seem reasonable to place the WAIS before the Rorschach in a test battery.

III RELATED RESEARCH

There have been many empirical studies dealing with the problem of intrusion of situational variables, but only a few which deal directly with the question of WAIS - Rorschach sequence.

Wickes (1956) and Gross (1959) showed that seemingly innocuous aspects of the test situation, such as perfunctory verbal comments on the part of the examiner, can serve as effective reinforcers, thereby making significant differences to the resulting protocol.

Keyes (1954) and Leventhal (1956) showed that special perceptual training produced significant differences in responses to the Group Rorschach. Keyes trained his subjects

on stimuli similar to the Street Gestalt pictures before administering the Group Rorschach and found that pre-training produced an increase in the number of whole responses (W). Similarly, Leventhal trained his subjects on the Gottschaldt figures which resulted in lower W and integrated W (Z) scores. Thus, it is clear that perceptual set, or style of perceiving, can be carried forward from one type of task to another.

However, other investigators present conflicting evidence. Norman, Leverant and Redlo (1952), Knopf (1954), and Kurtz and Riggs (1954) were unable to demonstrate the effect of special perceptual training on Rorschach scores. Rorschach scores were unaltered by having one group of subjects first look at colored food ads or by having a second group look at pictures of people in motion (Norman, et al., 1952). Pre-Rorschach perceptual training in finding animals or animal parts for one group, while a second group watched a film on the nature of color did not seem to change the picture of the over-all personality as revealed by the Rorschach (Knopf, 1954). In an experiment where subjects had first been exposed to a visual set to perceive animals, Kurtz and Riggs (1954) concluded that, so far as their study was concerned, "...Rorschach workers remain secure in the assumption that implicit peripheral sets will not influence test results to any appreciable extent" (p. 470).

One explanation for the conflicting results found by

these two groups of experiments may lie in the nature of the training tasks. Those of Keyes and Leventhal may be viewed as having more test-like characteristics than those used by Norman et al., Knopf, and Kurts and Riggs. It may be the case that response styles carry over most effectively when the characteristics of the training stimuli are most like the characteristics of the test stimuli. It may be easier to shift from colored food ads, for example, to the Rorschach inkblots than to break the perceptual set created by the Gottschaldt figures which are themselves part of a psychological test.

Investigations of the effect of test order as a situational variable influencing test results are surprisingly scarce. The first two studies in this area were conducted by Gibby, Stotsky, and Miller (1954) and Cassell, Johnson, and Burns (1962). This latter study is of limited value in that the authors examined the effect of six different orders upon the test scores in a battery consisting of the short form of the Wechsler-Bellevue II (WBII), the House-Tree-Person Test (H-T-P), and selected subtests of the Wide Range Achievement Test. From their results, they concluded that, "...the order of presentation of the tests in the battery made no difference in the over-all results" (p. 465). If the implications of this statement are to be interpreted generally, their conclusion does not seem warranted. Furthermore, the outcome of their experiment is not sur-

prising, as Van De Castle (1964) pointed out: "... there would appear to be little basis for assuming that experience with any one of these tests would alter the subject's approach to any later tests of the paper and pencil type included in their battery" (p. 287). This still leaves unanswered the question as to whether a more unstructured test such as the Rorschach, which has been shown to be sensitive to external influences, would reveal any differences in scores as a function of test order.

The study of Gibby et al. (1954), like the present one, was concerned with the extent to which the Rorschach protocol was influenced by the set created by the preceding administration of another psychological instrument. These authors also emphasized the importance of the need to standardize the order of presentation of the test within a battery should it be found that the Rorschach protocol varied with the nature of the previous technique.

The procedure consisted of administering to each subject (the subjects were 100 neurotics) one of four instruments, The Bender-Gestalt, the TAT, the WB II, or the Goldstein-Scheer Test, before the Rorschach. There were five categories of subjects (N=20 each), including a control group which received no test prior to the Rorschach. Analysis of variance of 11 Rorschach variables tested the over-all differences among Rorschach protocols. None of the results attained or even approached significance. The authors concluded, there-

fore, that there was no tendency for an administration of the four tests involved to influence subsequent performance on the Rorschach.

This study may be criticized insofar as the authors' design was not well-suited to their purpose. The interference effect of test order is a delicate matter and requires an extremely sensitive experimental design. Gibby et al. used inter-group comparisons, as opposed to an intra-individual design, to determine the effects of previous techniques on the Rorschach. Without establishing a "base line" of the subject's previous performance on the Rorschach, the potential differences in performance as a result of the interference effect may be balanced out and go undetected in the analysis if the direction and degree of change of individual subjects was sufficiently diverse.

Such was the problem of design in a study by Carp and Shavzin (1950) which found that a group taking the Rorschach under instructions to make a good impression and a group taking the test under instructions to make a bad impression produced no significant group differences (except for the Z score). The authors expressed the opinion that the data "clearly showed differences" (p. 232). But, again, the directions taken by individual subjects were so diverse that differences may have been balanced out in the analysis.

Since Wickes (1956) and Gross (1959) have shown that the

production of human movement (M) and human content (H) on the Rorschach can be altered as a function of subtle examiner behavior, Van De Castle (1964) thought it plausible that more H might appear on the Rorschach if it were administered after tests emphasizing human beings. He found that two matched groups of 22 theological students showed significant differences in the production of H, depending upon whether the Rorschach preceded or followed the presentation of nine TAT cards and two Draw-A-Person drawings. Van De Castle concluded that, "these findings, if independently confirmed, would indicate that, although previously overlooked, test order may be an important factor in modifying certain projective test scores" (p. 286).

The effect of test order upon children's Rorschach animal content (A) was examined by Magnussen (1967). To evaluate the effect of a predetermined order of tests emphasizing animal content, Magnussen administered the Draw-An-Animal (DAA) -- Child's Apperception Test (CAT) -- Rorschach sequence to an experimental group while a control group received the same tests in the sequence: Rorschach -- DAA --CAT. The results of this study were consistent with those obtained by Van De Castle (1964) in that the experimental group produced significantly more A than did the control group. Again, therefore, it has been empirically demonstrated that the sequence of individual tests given can

exert a significant influence on the production of content on the Rorschach.

Girsso and Meadow (1967) were concerned with demonstrating the interference effects which a Rorschach has on certain WAIS subtest scores. Three matched groups of college students (N=20 in each) were administered five subtests of the WAIS: Comprehension, Similarities, Digit Span, Picture Completion, and Block Design. Three weeks later, each group was given one of three treatments immediately preceding the readministration of the three Verbal subtests of the WAIS. One group was presented with the associative phase of the Rorschach, a second group was given no test. The results confirmed the authors' hypothesis: Subtest score differences between pre- and posttest administration of the WAIS subtests for the group receiving the Rorschach were significantly below those of the two control groups.

In keeping with Grisso and Meadow's (1967) view that the experience of taking a Rorschach may have significant effects on posttest behavior in general has been dramatically evidenced in recent case reports by Bondy (1970), in which he cited the precipitation of overt psychotic behavior in two psychiatric patients immediately subsequent to the Rorschach experience.

IV SUMMARY

In summary, the literature on test order with respect

to the WAIS - Rorschach question presents conflicting opinions and evidence. While some authors favor administering the WAIS prior to the Rorschach, others take an opposite position. The related experimental studies are few and their contradictory results at least partially explained as a function of different experimental designs and the variety of tasks imposed.

L'Abate (1964) appears to offer the most completely developed rationale. In his view, the interference effect of the WAIS scores might be produced by the anxiety aroused by the Rorschach experience. The research of Grisso and Meadow (1967) indicated that the Comprehension, Similarities, and Digit Span subtest scores were lowered when the Rorschach preceded the WAIS. Gibby et al. (1954) demonstrated that a previously administered WAIS did not influence several Rorschach variables. Both of these studies seem to provide experimental evidence in favor of L'Abate's position. The case reports of Bondy (1970) would also support L'Abate's rationale for ordering clinical test batteries. H referred to two psychiatric patients whose post-Rorschach behavior was psychotic although their pretest behavior lacked such manifestations.

Piotrowski (1958) presented a reasonable theory; however, his view lacks direct empirical demonstration. He believed that to present the W-B II subtests (which he

described as formal and impersonal) before the Rorschach would exert an inhibitory influence upon the subject's imagination, thus yielding a "less meaningful" Rorschach record.

CHAPTER III

EXPERIMENTAL DESIGN AND PROCEDURE

I DEFINITIONS

In order to make clear some of the paramters of the present study, the following operational definitions are advanced:

Experimental Treatment

The administration of one psychological test just prior to a second, different, psychological test. Any change resulting on the second test due to the first (relative to an establised baseline) was the interest of this study. In particular, it was the reversal of administrations of the Rorschach and WAIS at a second administration of these two experimental treatment.

Experimental Effect

The influence of the experimental treatment (or lack thereof) upon the protocol of a second test constituted the study's dependent variable.

Pretest

The test, the results of which served as a basis of comparison for a subject's performance on the same test at a different time.

Posttest

The test, the results of which reflected the experimental effects.

WAIS - Rorschach Interference

The effects that a WAIS (when constituting the instrument of the experimental treatment) may have had on the responses to a subsequently administered Rorschach.

Rorschach - WAIS Interference

The effects that a Rorschach (when serving as the instrument of the experimental treatment) may have had on the responses to the verbal subtests of the WAIS chosed as indicators.

Table I briefly describes the WAIS subtests involved in this experiment.

TABLE I

DESCRIPTION OF WAIS SUBTESTS

SUBTEST	DESCRIPTION
Comprehension	Questions dealing with practical situations requiring "common sense" judgment for successful performacne (Rapaport et al, 1945). Reflects practical information and general ability to evaluate past experience (Wechsler, 1958).
Similarities	A reliable measure of intelligence requiring the subject to perceive the common elements of the terms he asked to compare, and, at higher levels, his ability to bring them under a single concept (Wechsler, 1958).
Digit Span	The subject is required to repeat digits, first forward, then backward. Achievement is considered to rest primarily on the intellectual function of attention (Mayman, Schafer, and Rapaport, 1951).
Picture Completion	The subject's task is to identify the missing part from pictures. To visually organize and differentiate essential from unessential details and concentration are the major functions involved (Mayman et al., 1951).
Block Design	A task requiring replication of a given patteren with blocks within a time limit. It involves both synthetic and analytical ability, a test of visual-motor coordination (Mayman et al., 1951).

Table II briefly defines the Rorschach variables that were of interest in this study. All definitions follow Klopfer et al. (1954).

TABLE II

BRIEF DEFINITIONS OF RORSCHACH VARIABLES BASED ON THE KLOPFER SCORING SYSTEM

VARIABLE	DEFINITION
W	The whole response, including its subclassifications; indicates at least two-thirds of the blot was used in forming percept. Indicates integrative ability.
D	The large usual detail, usually insular in location, marked off by space, shade or color from rest of the blot. Reflects ability to differentiate perceptual field.
d	The small usual detail, usually insular or peninsular, similarly maked off by space, shading, or color from rest of blot. Indicates degree of anxiety and insecurity.
Dd	Unusual detail; includes tiny details, edge details, or rare detail. Indicates compulsive preoccupation with detail.
S	Forming percept on non-blot, space area of card. Indicates negativism.
M	Perception of human movement in blot. Reflects intelligence and empathic capacity.
FM	Perception of animal movement in blot. Reflects acknowlegement of one's "instinctual life."
F	Percept determined by shape of blot. Indicates degree of emotional control.
FC	Percept determined by combination of shape and color of blot. Reflects emotional contact and control.

TABLE II CONT'D

VARIABLE	DEFINITION
CF	Percept determined largely by color of blot with scant attention to shape. Reflects weak emotional control.
C	Percept determined by color of blot alone, revealing pathological lack of emotional control.
FK	Perception of depth or vista in determination of percept as well as shape. Indicates ability to be matter-of-fact.
KF	Perception of depth largely determines percept. Reflects aloofness, "personal distance", evasiveness.
K	Perception of depth alone determines percept. Reflects anxiety and frustration of affectional needs.
P	A popular response, several of which would indicate emphasis on conventionality.
P_{COLOUR}	A popular response on a color card. If disproportionately high, may indicate recourse to convention in face of emotional impact.
H	Percept is of human content. May index intelligence and degree of positive self-regard.
Obj	Percept content is of a man-made object. Reveals immediate preoccupations; noted with gregarious adjusting persons.
%R on VIII,IX,X	Percentage of total responses given on cards VIII, IX, and X. Indicates general responsiveness to emotional stimuli from the environment.
$R_{category}$	The number of various scoring categories for content developed. Indicates intellectual efficiency in regard to reflexibility

TABLE II CONT'D

VARIABLE	DEFINITION
	of approach and range of interpretive background.
FLR	The estimate of goodness of fit of the percept to the blot. An indication of intellectual capacity and strength of reality-testing.
Rtime	Time lapse between card presentation and response. Index of resource mobility and impulsiveness.
FC:(CF+C)	Ratio of the number of FC responses to the sum of the CF plus C responses. A sign of degree of control over impulsive expression of emotionality.
W:M	Ratio of number of W responses to the number of M responses. An index of the extent to which an individual is able to mobilize his creative and productive energies to back up his intellectual interests and ambitions.

II INSTRUMENTS

The Rorschach and WAIS are particularly appropriate tests with which to investigate the test-interference effect of their popularity in clinical test batteries. Often they constitute the entire battery, one being administered immediately after the other.

Five subtests of the WAIS were selected to represent the entire test: Comprehension, Similarities, Digit Span, Picture Completion, and Block Design. The three Verbal subtests

(Comprehension, Similarities, and Digit Span) were selected because of their assumed susceptibility to interference from the previously administer Rorschach (underlying assumptions are discussed under Hypotheses 1i, 1ii, and 1iii in this chapter).

The Performance subtests (Picture Completion and Block Design) were included for two important reasons: First, to contribute to the IQ. Maxwell (1957) has demonstrated that the suggested pentad has a correlation coefficient of .964 with the Full Scale WAIS score. In the present study, IQ was calculated by the pro-rating method outlined in the WAIS manual; second, to simply add the "bulk" of the WAIS. Fewer than five subtest might not have produced the experimental effect due to insufficient exposure of the subject to the WAIS experience.

With respect to the Rorschach, only the associative and inquiry phases were administered as is the common practice in clinical settings. Choice of administration instructions (see Appendix A) was based on the author's training and experience and the cautions of Bohm (1958).

In order to ensure standardized administration and scoring, the system used for scoring the Rorschach followed the outline suggested by Klopfer et al. (1954). For the WAIS, the instructions for administration and scoring in the WAIS manual were followed.

All test administrations and scoring were carried out by the author. In an effort to overcome the problems of experimenter bias, all 144 test records were scored a second time by another qualified person. The percentage of agreement between the two scorers over scoring categories on the Rorschach was calculated and reported by the independent scorer to be 86.0%. However, because certain scoring categories were subsumed under more general categories for purposes of data analysis, the actual percentage of agreement was 94.2%.

Similarly, the percentage of agreement on the Comprehension and Similarities subtests of the WAIS was calculated and reported to be 98.1%. Where disagreement between the two scorers was found, the author's score was retained for the data analysis. The percentages of disagreement for both the Rorschach and the WAIS (5.8% and 1.9%, respectively) were considered insignificant to the conclusions based on the study's findings.

III THE SAMPLE

In order to isolate the experimental effect in an intra-individual, test-retest design, it was important to keep as many conditions constant as possible, allowing only the effect of the experimental treatment free to affect change in the dependent variable. One such condition was

the personal stability and life-style of the subjects over the test-retest interval. It was considered desirable that the subjects be from the normal population and that their life-situations be relatively stable. A less stable group would tend to show greater differences over time for reasons other than the experimental treatment. As homogeneity and accessibility were further considerations, a group of first-year nursing students was chosen as being most suitable for the study's purposes.

The subjects were 40 female nursing students enrolled in the first-year class at Royal Alexandra Hospital in Edmonton, Alberta. The subjects, all volunteers, were requested to attend two testing sessions, four months apart, and informed that each session would consist of administration of a personality and an intelligence test. All subjects received assurance that all test results would be treated as confidential. The ages of the subjects at the first test session ranged from 16.9 to 28.8 years. Mean age was 19.5 years. Subject IQ scores ranged from 95 to 125, the mean IQ being 108.6 with a standard deviation of 6.64.

Following the second test session, four subjects were deleted from the experiment. Two of these had discontinued their training; two were disqualified by the examiner on the basis of a questionnaire administered at the end of the second session (see Appendix B), the purpose of which was

to determine whether changes in the posttest scores could be a function of significant life-experiences rather than the experimental treatment. It had been decided prior to the beginning of the experiment that the test scores of any subject who felt that she had changed significantly in her personality would not be considered in the analysis of the data. The two subjects deleted for this reason indicated that they perceived themselves as being significantly different people due to their recent, intense involvement with the nonmedical use of drugs (LSD). It may be interesting to note that, in the examiner's opinion, there were no significant changes in personality functions of these two subjects reflected in their Rorschach records. Deletions, therefore, brought the number of subjects included in the final analysis to 36.

IV EXPERIMENTAL DESIGN AND PROCEDURE

First Test Session

All 36 subjects were seen individually by one examiner over a period of one week in an office suitable for testing. First, the Rorschach was administered to all subjects followed immediately by the Comprehension, Similarities, Digit Span, Picture Completion, and Block Design subtests of the WAIS. At the end of the session, each subject was informed that she would be contacted in her class

at a later date to arrange a time for the second one. All subjects were cautioned against discussing the nature or content of the interview with classmates (see Appendix C).

Inter-session Interval

In determining the length of the time interval between the first and second test sessions, two important factors were considered: First, if the interval was too long, the personality structures of the subjects might be significantly changed because of maturational processes. Such changes would contaminate the index of the effects of the experimental treatment on the posttest. Second, if the time interval was too short, the subjects might be sufficiently test-wise at the second testing, as a result of their initial test experience, to improve through practice. Thus, the interval was arbitrarily set at four months and a control group of subjects introduced to index the variance due to maturational and practice effects.

During the interval, all 36 subjects were randomly placed into one of two groups consisting of 18 in each: an experimental group and a control group. A table of random numbers was used for this purpose (Glass and Stanley, 1970). The mean age and IQ for the experimental group were 19.52 years and 106.28, respectively; the mean age and IQ for the control group were 19.59 years and 109.94, respectively.

Just prior to the second session, each subject was

contacted to set the appointment. As much as possible, the subjects were seen in the same order as before to minimize the differences in length of interval. Most subjects were seen exactly 18 weeks after their first session. The others were seen within 18 weeks and two days of their first appointment.

Second Test Session

Every effort was made to create identical test situations for both the first and second sessions. Again, the same examiner tested all 36 subjects. Each subject was instructed not to make any effort to recall responses given during the first session (see Appendix D).

The differential treatments for experimental and control subjects during the second session were as follows:

(1) Experimental subjects were administered the same five subtests of the WAIS as previously, followed immediately by the Rorschach.

(2) Control subjects were administered the Rorschach, followed immediately by the partial WAIS. This treatment, then, was the same as that of the first session.

At the session's conclusion, each subject was again instructed not to discuss the nature or content of the interview with her classmates (see Appendix E).

Design

The design of the study permitted examination of the

data from four perspectives:

(1) Comparison of individual Rorschach protocols without the influence of a previously administered WAIS (This group of subjects served as the control group for the WAIS - Rorschach interference aspect of the study).

(2) Comparisons of individual Rorschach protocols with and without the influence of a previously administered WAIS.

(3) Comparisons of individual WAIS records with and without the influence of a previously administered Rorschach (This group served as the experimental group in the Rorschach - WAIS interference aspect of the study).

(4) Comparisons of individual WAIS records with the influence of a previously administered Rorschach.

The use of a subject's own test performance as a control or base line against which to compare his performance in the experimental situation was considered to be a procedure more sensitive to differences between treatments than has been the case when studies have used the inter-group method. Comparisons were made, then, between the posttest administrations of the experimental and control groups (with considerations to each subject's pretest) under the assumption that differences in scores between groups was a function of the independent variable, that is, the previously administered test.

This assumption was not without problems. First, although every effort was made to establish identical test situations for the first and second sessions, it was impossible to recreate the exact conditions of the first. Situational variables other than those being manipulated by the examiner (the previously taken test) may have accounted for some of the change in the experimental protocols. However, one function of the control subjects was to act as an index of such interference.

Secondly, it is possible that the personality structures of the subjects themselves changed during the time interval between sessions. It was impossible to control for this factor; however, two precautions were taken: (1) choosing a relatively stable subject population; and, (2) fixing the time interval so as to guarantee that such personality differences would be minimal.

Thirdly, the test-retest method may be criticized from the point of view that the subjects might have become test-wise. As already mentioned, however, variance due to this factor would have been indexed in the performance of the control groups during the two test sessions. It was considered inadvisable to utilize the split-half method of test presentation because elicitation of the experimental effect required the impact of a full Rorschach on the WAIS. Similarly, the alternate forms method was not considered

because response differences so produced would have conflicted with the purposes of the study.

These difficulties notwithstanding, the advantages of the intra-individual, test-retest design over the inter-group method for the present study has already been clearly indicated (Carp and Shavin, 1950).

Diagrammatically, the procedure followed is presented in Figure 1.

FIGURE 1

DIAGRAMMATIC REPRESENTATION OF THE DESIGN

	First Test	Second Test	
Session I	Rorschach	WAIS	(Control Gp.)
	Rorschach	WAIS	(Exper. Gp.)
	Four month Interval		
Session II	Rorschach	WAIS	(Control Gp.)
	WAIS	Rorschach	(Exper. Gp.)

V ANALYSIS OF DATA

The purpose of the statistical analysis was to determine the significance of the impact of the experimental treatment on posttest scores. Several methods of analysis were available, including the analysis of variance of raw gain scores (that is, the difference between the post- and pretest scores) and the analysis of covariance. While the gain score method was intuitively appealing, it was rejected in favor of the analysis of covariance. This choice was made primarily because the scores formed by subtracting pretest scores from posttest scores are systematically related to any random error of measurement in the pretest (Cronbach and Furby, 1969). The analysis of covariance, on the other hand, reflects gain even though the pretest scores are "statistically controlled for" (Ferguson, 1965, p. 326). The actual analysis, however, was of the posttest scores (that is, residual differences between the experimental and control groups) after the effects of the pretest were taken out. The pretest scores, then served as the covariate.

A second reason for choosing the analysis of covariance over the analysis of variance, was the increased sensitivity of the covariance operation to experimental effect (Hakstain, 1971).

The level of statistical significance for an acceptable difference in testing the research hypotheses was set

at, or less than, .05. The University of Alberta's ANCO 10 was used.

VI RESEARCH HYPOTHESES

Hypothesis One

The first general hypothesis was that certain WAIS subtest scores will be lowered when the WAIS is administered after the Rorschach. Following Grisso and Meadow (1967), it was specifically hypothesized that:

1i The Digit Span subtest raw score of the WAIS will be lowered as a function of a previously administered Rorschach.

If anxiety was aroused by the Rorschach experience as L'Abate (1964) suggested, it would impair the attention and concentration required for good performance on the Digit Span task. This assumed that the task is tapping one's ability to attend (Gurvitz, 1951; Harrower, 1956; Lewinski, 1945; Mayman et al., 1951, Patterson, 1953; Rapaport et al., 1945; Schafer, 1948; Siegman, 1956).

1ii The raw score on the Comprehension subtest of the WAIS will be lowered as a function of the previously administered Rorschach.

The Comprehension subtest is reportedly sensitive to impulsive and autistic responses (Clark, 1948; Fisher and Sunukjian, 1950; Gurvitz, 1951; Mayman et al., 1951; Rapaport et al., 1945) which might occur more readily following the Rorschach which is autistic in nature (Schafer, 1954; Holt

and Havel, 1960).

1iii The raw score on the Similarities subtest of the WAIS will be lowered as a function of a previously administered Rorschach.

Rorschach-induced primitive thinking, being concrete in nature (Holt and Havel, 1960), might act to inhibit an abstract-conceptual level of thinking required for good performance on the subtest (Benton and Howell, 1941; Patterson, 1953; Rappaport et al., 1945; Wechsler, 1958).

Hypothesis Two

The second general hypothesis was that certain Rorschach variables will be influenced by a previously administered WAIS.

2i There will be a change in the total number of responses (R) on the Rorschach as a function of the previously administered WAIS.

It is possible that the structured nature of the WAIS will exert an inhibitory influence upon the subject's imagination (Piotrowski, 1958) and thereby reduce the total number of responses. It is also possible that the WAIS will instill pedantic tendencies and a compulsive need for completion which may manifest themselves in an increase in R on the subsequent Rorschach (Klopfer et al., 1954).

2ii There will be a decrease in the percentage of responses to cards VIII, IX, and X (%R-VIII, IX, X) on the Rorschach as a function of the previously administered WAIS.

The structured nature of the WAIS may serve to inhibit the subject's general responsiveness to emotional impact from the environment as reflected in the response-productivity on the last three cards of the Rorschach (Klopfer et al., 1954).

2iii There will be an increase in the number of response categories on the Rorschach as a function of the previously administered WAIS.

The achievement orientation instilled by the WAIS experience may serve to increase the subject's range of interpretive background that contributes to the efficiency of intellectual functioning (Klopfer, 1954).

2iv There will be an increase in the number of Popular responses (P) on the Rorschach as a function of the previously administered WAIS.

Intelligence tests call for conventionalized, "correct" responding (Mayman et al., 1951). The subject soon becomes aware that he must respond in terms of what is common protocol for the society of the test-makers in order to receive credit. After cognizing in this fashion during the WAIS experience, the subject may be found emphasizing conformity and perceiving the blots in obvious, agreed-upon ways on the Rorschach which immediately follows the WAIS. If such a carry-over of cognitive style occurs, it will be reflected in the number of P responses (Klopfer et al.,

1954; Mons, 1950; Rapaport et al., 1946; Rosenzweig and Kogan, 1959; Sarason, 1954).

2v There will be a greater increase of popular responses to the colored cards (P_{COLOUR}) relative to an increase in the total number of P's on the Rorschach as a function of the previously administered WAIS.

To extend the reasoning in Hypothesis 2iv it is possible that the same effect, that is, emphasis on conventionality, will be more prominent for the Rorschach colored cards than for the achromatic cards. In the face of emotionality, the response to color (Klopfer et al., 1954), the subject may feel an even greater need to be conventional.

2vi The percentage of form determined response (F%) on the Rorschach will increase as a function of the previously administered WAIS.

As the WAIS requires impersonal, matter-of-fact, controlled adjustment (Schafer, 1954; Piotrowski, 1958; Mayman et al., 1951) so does the F% reflect this type of control (Klopfer et al., 1954; Schafer, 1954). Furthermore, the type of response determinant requiring the least personal involvement is the F (Klopfer, 1954; Rapaport et al., 1946) which is similar to the demand made upon the subject by the WAIS to regard conventional, "correct" protocol in order to perform well (Mayman et al., 1951).

2vii The percentage of human movement responses (M) on the Rorschach will vary as a function of a previous administered WAIS.

The direction of variance of M is not predicted as it is possible to conceive of a change in either direction. After Piotrowski (1958), the impersonal, rational, and objective nature of the WAIS may exert inhibitory influences of the subject's imagination and creative resources, thereby reducing the production of M (Beck, 1945; Klopfer et al., 1954).

On the other hand, it could be argued that, since optimal performance on the WAIS requires full mobilization of one's intellectual resources and, at the same time, good inner control of impulses, this higher, secondary process-involved level of responding might cause an increase in the subject's production of M. According to both Phillips and Smith (1953) and Klopfer, et al., (1954), M is thought to reflect higher mental abilities and self-control.

2viii There will be a decrease in the percentage of animal movement responses (FM) on the Rorschach as a function of the previously administered WAIS.

Assuming that FM reflects one's ability to acknowledge and integrate one's impulse life (Klopfer et al., 1954; Phillips and Smith, 1953), it is reasonable to expect a

decrease in the number of FM's if the previously administered WAIS creates a "self-control" set (Piotrowski, 1958).

2ix There will be a decrease in the percentage of colour determined responses (Sum FC+CF+C) on the Rorschach as a function of the previously administered WAIS.

Since color responses are reported to reflect one's reaction to the emotional nuances of the environment (Klopfer, 1954; Phillips and Smith, 1953), it is expected that these responses will decrease because of the emphasis upon rational behavior during the WAIS administration (Piotrowski, 1958).

2x There will be an increase in the percentage of vista determined responses (Sum FK+KF+K) as a function of the previously administered WAIS.

Assuming that vista responses reflect one's efforts to objectify or put distance between oneself and one's situation (Klopfer et al., 1954), this perceptual set might carry over from the objective style of thought required by the WAIS (Piotrowski, 1958) and thereby make this response style on the Rorschach more prominent that it would have been if the WAIS had not preceded it.

Thus, 13 specific hypotheses were made. The first three predicted changes in certain WAIS subtest scores as a function of a previously administered Rorschach; the remaining ten were concerned with changes on certain Rorschach variables as a function of a previously administered WAIS.

CHAPTER IV

RESULTS AND DISCUSSION

I HYPOTHESIS ONE

Hypothesis 1i The first hypothesis predicted that the raw score on the Digit Span subtest of the WAIS is lowered as a function of a previously administered Rorschach. In the null form, the hypothesis states that, for any subject, the difference in raw scores between performance on the Digit Span subtest with or without a previously administered Rorschach will be equal to zero. This hypothesis was tested by the analysis of covariance, the results of which are summarized in Table 3. Results of the analysis show differences significant at the .05 level in favor of the research hypothesis. The conclusion indicated is that the Rorschach interferes significantly with Digit Span performance.

These results lend support to the theoretical rationale for organization of clinical test batteries put forth by L'Abate (1964). The anxiety created by the Rorschach experience may serve to lower the Digit Span score.

Hypothesis 1ii The second hypothesis predicted that a previously administered Rorschach will significantly lower the scores on the Comprehension subtest. Stated in null form, the differences in Comprehension subtest scores due to the influence of a previously administered Rorschach will equal zero. The analysis of covariance tested hypothesis and the

TABLE 3

SUMMARY OF ANALYSIS OF COVARIANCE FOR DIGIT SPAN SUBTEST SCORES; ADJUSTMENT OF POSTTEST MEANS

Source	df	MS	Adjusted F	P
Between Groups	1	10.294	4.270*	0.047
Within Groups	33	2.410		

Group	Unadjusted Mean	Adjusted Mean
Experimental	11.888	11.825
Control	12.833	12.896

* indicates that the F is significant ($\alpha = .05$)

TABLE 4

SUMMARY OF ANALYSIS OF COVARIANCE FOR COMPREHENSION SUBTEST SCORES; ADJUSTMENT OF POSTTEST MEANS

Source	df	MS	Adjusted F	P
Between Groups	1	33.245	6.195*	0.018
Within Groups	33	5.689		

Group	Unadjusted Mean	Adjusted Mean
Experimental	16.666	17.227
Control	20.111	19.550

* indicates that the F is significant ($\alpha = .05$)

summary of the results is presented in Table 4. The results indicated that a previously administered Rorschach serves to significantly lower the Comprehension subtest raw score. Therefore, the null hypothesis was rejected; the alternative research from held tenable.

Again, L'Abate's (1964) theory has been supported by empirical research. The theoretical rationale put forth by Holt and Havel (1951) and Schafer (1954) has been similarly supported. The Rorschach, which is autistic in nature, may lower the Comprehension subtest score because of its sensitivity to impulsive and autistic responses.

Hypothesis 1iii The null form of the third hypothesis stated that the differences between Similarities subtest scores with and without a previously administered Rorschach will equal zero. The summary of the results of the analysis of covariance are presented in Table 5. Differences were not significant; the null hypothesis was held tenable. While the research hypothesis was rejected, a definite trend in its favor was noted (P=.070).

In this instance, L'Abate's (1964) theory was not clearly supported nor was the suggestion of Holt and Havel (1951) that Rorschach-induced primitive thinking might inhibit the abstract-conceptual level of thinking required for good performance on the Similarities subtest. However, the data was interpreted as being suggestive of Rorschach-Similarities subtest. However, the data was interpreted as

being suggestive of Rorschach-Similarities interference.

TABLE 5

SUMMARY OF ANALYSIS OF COVARIANCE FOR SIMILARITIES SUBTEST SOURCES; ADJUSTMENT OF POSTTEST MEANS

Source	df	MS	Adjusted F	P
Between Groups	1	15.383	3.505	0.070
Within Groups	33	4.388		

Group	Unadjusted Mean	Adjusted Mean
Experimental	17.111	17.124
Control	18.444	18.431

The F ratio is not significant.

II HYPOTHESIS TWO

Hypothesis 2i The 2i th hypothesis, that a WAIS may reduce the number of responses to a subsequently administered Rorschach, was tested by comparing the number of responses on the posttests of the experimental and control groups after the effects of the pretests were "carried out." Table 6 contains the results of the analysis of covariance. These findings indicated that there were no significant differences between the groups in regard to the number of responses to the Rorschach. Therefore, the research hypothesis was rejected.

Furthermore, the clinical opinion of Piotrowski (1958), that the structured nature of the WAIS will inhibit the subject's imaginative resources (thereby producing fewer responses) was not supported.

TABLE 6

ANALYSIS OF COVARIANCE SUMMARY
FOR NUMBER OF RESPONSES TO RORSCHACH

Source	df	MS	Adjusted F	P
Between Groups	1	15.604	0.653	0.425
Within Groups	33	23.885		

The F ratio is not significant.

Hypothesis 2ii It was also hypothesized that the percentage of responses to cards VIII, IX, and X of the Rorschach will be reduced as a function of a previously administered WAIS. The analysis of covariance summary is presented in Table 7. The results indicated that there was no significant differences between the experimental and control groups on the variable: %R - VIII, IX, X due to the influence of a previously administered WAIS. The research hypothesis was therefore rejected.

The underlying rationale, that the selective, adaptive, reality-oriented performance during the WAIS will inhibit the subject's general responsiveness to emotional nuances, was not supported.

TABLE 7

ANALYSIS OF COVARIANCE SUMMARY

FOR %R - VII, IX, X

Source	df	MS	Adjusted F	P
Between Groups	1	247.140	1.799	0.189
Within Groups	33	137.323		

The F ratio is not significant.

Hypothesis 2iii This hypothesis stated that the number of response categories developed on the Rorschach will increase as a function of a previously administered WAIS. As shown in Table 8, the analysis of covariance on the posttest scores between the experimental and control groups (the pretest scores being the covariate) found no significant differences between group posttest scores. The conclusion indicated was that a WAIS administration will not influence the number of response categories on a subsequently administered Rorschach.

The rationale implying that the achievement-orientation developed during the WAIS experience will serve to increase the subject's interpretive background and intellectual efficiency (as reflected in the number of response categories) was not supported.

TABLE 8

ANALYSIS OF COVARIANCE SUMMARY
FOR NUMBER OF RORSCHACH RESPONSE CATEGORIES

Source	df	MS	Adjusted F	P
Between Groups	1	97.921	0.328	0.575
Within Groups	33	305.235		

The F ratio is not significant.

Hypothesis 2iv The 2iv th hypothesis predicted that the number of popular responses to the Rorschach will increase if the test is administered subsequent to a WAIS. The results (see Table 9) showed no significant differences on the posttest scores between the experimental and control groups. This hypothesis was therefore rejected with the conclusion that the number of popular responses was not influenced by a previously administered WAIS.

The assumption underlying this hypothesis -- that the conventionalized "correct" responding required during the WAIS may carry forward and elicit conforming, obvious, and agreed-upon ways of perceiving the blots -- was not supported by the data.

TABLE 9

ANALYSIS OF COVARIANCE SUMMARY
FOR NUMBER OF POPULAR RORSCHACH RESPONSES

Source	df	MS	Adjusted F	P
Between Groups	1	255.019	1.995	0.167
Within Groups	33	127.772		

The F ratio is not significant.

Hypothesis 2v As an extension of the assumptions underlying Hypothesis 2iv, it was hypothesized that there would be a greater increase in the number of popular responses on the four colored cards (there is a fifth, Card IX, but it has no popular response in the Klopfer system used for this study) relative to the hypothesized increase in P's as a function of the previously administered WAIS. The conventionalized style of responding on the WAIS may carry forward and elicit the same type of response on the Rorschach as well, especially in the face of emotionality as elicited by the color on the four color cards. The results, summarized in Table 10, showed no significant differences between the posttest scores of the experimental and control groups.

Hypothesis 2vi It was predicted that the percentage of form-determined responses on the Rorschach will increase as a function of a previously administered WAIS. Table 11 contains the results of the analysis of covariance performed to compare the posttest scores of the experimental and control groups. No significant differences were found. Therefore, it was indicated that the WAIS did not influence the percentage of form-determined responses on the subsequently administered Rorschach.

Piotrowski's (1958) view of the WAIS creating an impersonal, matter-of-fact, controlled mental set in-

TABLE 10

ANALYSIS OF COVARIANCE SUMMARY FOR NUMBER OF POPULAR RESPONSES TO CHROMATIC CARDS RELATIVE TO TOTAL NUMBER OF POPULAR RESPONSES

Source	df	MS	Adjusted F	P
Between Groups	1	344.082	0.664	0.421
Within Groups	33	518.383		

The F ratio is not significant.

TABLE 11

ANALYSIS OF COVARIANCE SUMMARY FOR PERCENTAGE OF FORM DETERMINED RESPONSES ON THE RORSCHACH

Source	df	MS	Adjusted F	P
Between Groups	1	331.953	1.612	0.213
Within Groups	33	205.846		

The F ratio is not significant.

hibiting the creative spontaneity of the subject's later Rorschach performance (as reflected in the increase in percentage of form-determined responses) was not substantiated.

Hypothesis 2vii It was predicted that the percentage of human movement responses will vary as a function of the previously administered WAIS. It was felt that the impersonal, rational, and objective nature of the WAIS might exert inhibitory influences on the subject's imagination and creative resources, thereby reducing the production of human movement responses. On the other hand, it was also felt that the full mobilization of one's intellectual resources and good inner control of impulses required for the WAIS performance might cause an increase in the subject's production of human movement responses.

Since the direction of variance of human movement responses was conceivable as both an increase and decrease, the direction of variance was not hypothesized. Table 12 contains the results of the analysis of covariance. The findings indicated that there were no significant differences in either direction. Hypothesis 2vii was therefore rejected and it was concluded that a WAIS will not influence the percentage of human movement responses to a subsequently administered Rorschach.

Hypothesis 2viii It was predicted that there will be a

TABLE 12

ANALYSIS OF COVARIANCE SUMMARY FOR PERCENTAGE OF HUMAN MOVEMENT RESPONSES ON THE RORSCHACH

Source	df	MS	Adjusted F	P
Between Groups	1	58.531	0.586	0.499
Within Groups	33	99.756		

The F ratio is not significant.

TABLE 13

ANALYSIS OF COVARIANCE SUMMARY FOR PERCENTAGE OF ANIMAL MOVEMENT RESPONSES ON THE RORSCHACH

Source	df	MS	Adjusted F	P
Between Groups	1	122.471	1.721	0.199
Within Groups	33	71.143		

The F ratio is not significant

decrease in the percentage of animal movement responses to the Rorschach as a function of a previously administered WAIS. Table 13 shows the results of the analysis of covariance, which found no significant differences between the post-test scores of the experimental and control groups due to the WAIS administration. It must be concluded that the WAIS did not influence the percentage of animal movement responses to the Rorschach.

The data did not support the rationale that the "self-control" set created by the WAIS serves to inhibit the acknowledgement and integration of one's impulse life.

Hypothesis 2ix It was predicted that there will be a decrease in the percentage of colour determined responses (FC+CF+C) on the Rorschach as a function of a previously determined WAIS. The results of the analysis of covariance are contained in Table 14, showing no significant differences between the experimental and control groups in the percentage of colour determined responses. It was concluded that a previously administered WAIS does not influence the number of colour responses to the Rorschach.

The underlying assumption that the emphasis upon rational behavior during the WAIS administration may serve to reduce one's reactivity to emotional nuances (as reflected in the sum FC+CF+C) was not substantiated.

Hypothesis 2x It was also predicted that the total

TABLE 14

ANALYSIS OF COVARIANCE SUMMARY
FOR PERCENTAGE OF COLOUR DETERMINED RESPONSES (FC+CF+C)
ON THE RORSCHACH

Source	df	MS	Adjusted F	P
Between Groups	1	179.222	1.224	0.276
Within Groups	33	146.370		

The F ratio is not significant.

TABLE 15

ANALYSIS OF COVARIANCE SUMMARY
FOR NUMBER OF VISTA RESPONSES
TO THE RORSCHACH

Source	df	MS	Adjusted F	P
Between Groups	1	43.574	1.308	0.261
Within Groups	33	33.295		

The F ratio is not significant.

number of vista responses (FK+KF+K) to the Rorschach will increase as a function of a previously administered WAIS. Table 15 contains the results of the analysis of covariance, showing no significant differences between the experimental and control groups. Therefore, Hypothesis 2x was rejected; the conclusion indicated was that the WAIS administration did not influence the total number of vista responses to a subsequently administered Rorschach.

The data, then, did not support the rationale that the objective style of thought required for the WAIS will carry forward to strengthen the perceptual set of objectivity and distance between oneself and one's situation (as indicated in the number of vista responses).

III NONHYPOTHESIZED RESULTS

Apart from the ten formal hypotheses (2i to 2x inclusive) concerned with WAIS-Rorschach interference, nine other Rorschach variables were examined. Considered to be less susceptible to the interference effects of the WAIS, these were not included in the formal hypotheses. However, as the information is of some interest, each of the nine variables will be discussed in terms of the effect of the previously administered WAIS upon each of them.

Table 16 contains the names of these nine Rorschach variables with a brief statement of the hypothesis concerning each one followed by its underlying assumptions.

Table 17 contains the results of the analyses of covariance performed on the data for the first six of the nine variables; Table 18 presents the findings by inspection of scores for the remaining three variables.

For Table 18, a significant difference in intra-individual comparisons was defined as a difference of at least 10% between pre- and posttest scores with respect to a given Rorschach variable. Then, every individual who had greater than 10% differences between his pre- and posttest scores was included in the experimental-control group comparisons for each variable. Again, a difference of at least 10% between the two groups was required for significance.

The results presented in Tables 17 and 18 indicate that there were no significant changes in any of the nine Rorschach variables due to the previously administered WAIS. It was therefore concluded that the previous administered WAIS did not influence scores on any of the following Rorschach variables: percentage of whole response, percentage of usual detail responses, percentage of object content, response times, average form-level-rating, FC:(CF+C) ratio, and W:M ratio.

TABLE 16

RORSCHACH VARIABLES; INFROMAL HYPOTHESE

AND UNDERLYING ASSUMPTIONS

Rorschach Variable	Hypothesis and underlying assumptions
1. Percent whole responses (W%)	As a function of a previously administered WAIS, there will be an increase in the number of W responses. The achievement orientation of the WAIS may carry forward to increase the need for intellectual achievement and ambition reflected in the W% (Klopfer et al., 1954).
2. Percent detail responses (D% + d%)	There will be increased attention to detail on the Rorschach as a function of a previously administered WAIS. The structured nature of the WAIS may lead to a constriction of personality functions and attention to the obvious as reflected in percentage of detail responses. (Beck, 1945).
3. Percent of unusual detail responses (Dd%)	There will be a decrease in the percentage of unusual detail responses to the Rorschach as a function of a previously administered WAIS. The structured nature of the WAIS may inhibit a subject's original, artistic resources reflected in Dd% (Klopfer et al., 1954).

TABLE 16 COND'T

Rorschach Variable	Hypothesis and underlying assumptions
4. Percent of human content responses (H)	There will be an increase in the percentage of human (H) responses to the Rorschach as a function of a previously administered WAIS. The structured nature of the WAIS may serve to increase the degree of conscious control over impulses as reflected in the H% (Klopfer et al., 1954).
5. Percent of object content (Obj%)	There will be an increase in the percentage of object content as a function of a previously administered WAIS. The impersonal nature of the WAIS may elicit an increase in the mechanistic impulses as reflected in the OBJ%.
6. Average response time	There will be an increase in the average response time as a function of a previously administered WAIS. The WAIS experience may cause the subject to deliberate, or consider his responses longer before reporting them.

TABLE 16 CONT'D

Rorschach Variable	Hypothesis and underlying assumptions
7. Average form-level-rating (F. L. R.)	There will be an increase in the average form-level-rating (using Beck's (1945) system) as a function of a previously administered WAIS. The achievement orientation of the WAIS may cause an increase in the subject's intellectual efficiency and relation to reality as reflected in the F.L.R. (Klopfer et al., 1954).
8. FC : (CF + C)	There will be an increase in the FC : (CF + C) ratio (that is, more FC's and/or fewer (CF + C's)) as a function of a previously administered WAIS. The WAIS experience may cause an increase in the subject's control over responsiveness to his social environment as reflected in the FC : (CF + C) ratio (Klopfer et al., 1954).
9. W:M	There will be a decrease in the W:M ratio (that is, more M's and/or fewer W's) as a function of a previously administered WAIS. The WAIS experience may result in increased mobilization of the subject's productive energies relative to his capacity as reflected in the W:M ratio (Klopfer et al., 1954).

TABLE 17

ANALYSIS OF COVARIANCE SUMMARY
FOR EVALUATION OF INFORMAL HYPOTHESES

Rorschach Variable	Source	df	MS	Adjusted F	P
W%	Between	1	102.585	0.336	0.566
	Within	33	304.862		
D% + d%	Between	1	70.109	0.250	0.620
	Within	33	280.418		
Dd%	Between	1	2.124	0.002	0.963
	Within	33	9.499		
H%	Between	1	70.603	0.593	0.447
	Within	33	119.046		
Obj %	Between	1	0.323	0.022	0.881
	Within	33	14.176		
R time	Between	1	0.115	0.001	0.970
	Within	33	81.407		

None of the F ratios are significant.

TABLE 18

SUMMARY OF INSPECTION FINDINGS

Rorschach Variable	Source of Difference	Significance of Difference*	
		Scorer I	Scorer II
F.L.R.	intra-individual	non sig.	non sig.
	inter-group	non sig.	non sig.
FC : (CF + C)	intra-individual	non sig.	non sig.
	inter-group	non sig.	non sig.
W : M	intra-individual	non sig.	non sig.
	inter-group	non sig.	non sig.

* A significant difference is one of at least 10% between pre- and posttest scores with respect to the given variable.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS FOR PRACTISE AND RESEARCH

I SUMMARY

The purpose of the present study was to examine the interference effects that a Rorschach may have on a subsequently administered WAIS, and, conversely, the interference effects that a WAIS may have on a subsequently administered Rorschach. Thirteen specific hypotheses were proposed for testing; the first three investigated the influence of a Rorschach upon WAIS performance and the remaining ten were concerned with the influence of a WAIS upon Rorschach performance.

The subjects for the study were 36 first-year nursing students; the experimental design was an intra-individual, test-retest. The analysis of covariance was used to test the hypotheses.

The results of the study indicated that the previously administered Rorschach significantly lowered the scores on the Comprehension and Digit Span subtests of the WAIS. A definite trend in the data indicated a similar effect on the Similarities subtest; however, this finding was considered inconclusive as differences between groups were not significant at the level set as acceptable (.05). The impact of a Rorschach on other WAIS subtests was not investigated; those noted above were chosen for study on the

basis of their assumed susceptibility to Rorschach interference.

The influence of a previously administered WAIS on ten different Rorschach variables was the concern of the second aspect of this study. Nine other Rorschach variables were also examined but not included in formal hypotheses. The Rorschach variables formally investigated were:

1. number of responses
2. percentage of responses to cards VIII, IX, and X
3. number of response categories
4. number of popular responses
5. number of popular responses to colour cards
6. percentage of form-determined responses
7. percentage of human movement responses
8. percentage of animal movement responses
9. percentage of colour-determined responses
10. percentage of vista-determined responses

The nine Rorschach variables investigated but no included in formal hypotheses were:

1. percentage of whole responses
2. percentage of usual detail responses
3. percentage of unusual detail responses
4. percentage of human content
5. percentage of object content
6. response times
7. form-level-ratings
8. W : M ratio
9. FC : (CF + C) ratio

Since none of the group differences examined even approached an acceptable level of significance, it was con-

cluded that, as far as the above 19 Rorschach variables are concerned, the WAIS did not influence the protocol of the subsequently administered Rorschach.

II DISCUSSION

The results of the present study are in keeping with those of the Grisso and Meadow (1967) study, which also investigated the influence of a previously administered Rorschach on the Digit Span, Comprehension, and Similarities subtests of the WAIS. The results of that study were considerably more significant (in the orders of p .01 and p .001) than those of the present one, perhaps because Grisso and Meadow did not administer the inquiry phase of the Rorschach, thereby allowing the full impact of the unstructured associative phase to precede the WAIS directly. Perhaps, then, the degree of Rorschach - WAIS interference demonstrated by the present study is more representative of the serial effect in clinical practice, where the inquiry phase is commonly included.

The results of this study are also in keeping with those of the Gibby et al. (1954) research, even though the experimental designs were considerably different. Both studies indicated that the WAIS experience did not influence several variables on a subsequently administered Rorschach.

Piotrowski's (1958) clinical test battery consisted

of the House-Tree-Person or Draw-A-Person, followed by the Rorschach and then the Wechsler-Bellevue II Similarities and Comprehension subtests. Piotrowski believed that to present the W-B II subtests (which he described as formal and impersonal) before the Rorschach would exert an inhibitory influence upon the subject's imagination, thus yielding a "less meaningful" Rorschach record. However, if one may use the 19 formal scoring categories investigated in the present study as some criterion for that which makes up a meaningful Rorschach, it would appear that Piotrowski's (1958) speculation concerning the inhibitory effects of the formal and relatively structured Wechsler-Bellevue II upon the Rorschach is unwarranted.

Brown (1958) advocated a sequence of tests within a battery which progressed with relation to the degree of intensity of the interaction between the subject and the examiner. Since there is less examiner-subject interaction during the Rorschach than during the WAIS, Brown suggested that the Rorschach should precede the WAIS. However, because of the interference effects that a Rorschach may have on a WAIS, as evidenced by the present research, and the absence of such effects for the reversed order of administration, Brown's view cannot be supported.

In the formulation of this experiment, three possible explanations for the Rorschach-WAIS interference were presented. The results of the study did not clearly

support any one of these rationales as the sole explanation for interference, but it is possible to speculate as to their relative contributions to the obtained effects. The three rationales were:

1. The Rorschach, as an unstructured test stimulus, might produce more regressive, autistic, and impulsive thinking (Holt and Havel, 1960) which may carry over to subsequent performance on the WAIS The WAIS scores might then be impaired since that test requires more selective, adaptive, reality-oriented responses for optimal performance (Schafer, 1954)
2. The Rorschach might produce a persisting lower level of motivation since it presents no clear criteria for successful performance.
3. The interference effects on the WAIS scores might be produced by the anxiety aroused by the Rorschach experience (L'Abate, 1964).

The experimental effect was obtained on the first and third subtest of the WAIS (Comprehension and Digit Span). A tendency for the same effect on the Similarities subtest was noted because of the nearly significant results. The factors involved in the three proposed explanations may be evaluated in terms of their ability to affect performance through the last subtest in spite of the fact that presentation of the first two subtests would have begun to undo

whatever interference factors had been generated by the Rorschach.

That regressive, impulsive thought-process tendencies could have persisted for such a length of time is questionable, but Holt and Havel's (1960) speculations cannot be rejected on the basis of the findings of the present study. Reduced motivation is weakened as a viable persisting interference factor, since the first two subtests would probably have renewed the level of motivation through the reestablishment of relatively clear critera for good performance. On an a priori basis, then, the anxiety interpretation would appear to be the most plausible. It is certainly conceivable that anxiety aroused in the Rorschach situation could persist over the period of time required for the three subtests.

It behooves the practising psychologist to recognize, not only the sort of intrusion that both he and the testing situation may produce, but also the potential intrusive effects contained in the nature of the test stimuli themselves. While there is considerably more subject-examiner interaction during the WAIS compared with the Rorschach, a purely quantitative assessment of the interaction is obviously an inadequate basis for discussing interference effects of previously administered tests. The tasks required of the subject during the WAIS probably lend them-

selves to the more superficial aspects of personality functions than the tasks set by the Rorschach. It is not surprising, therefore, that the impact of the different test stimuli produce qualitatively different intrusive effects on the subject.

III IMPLICATIONS FOR RESEARCH AND PRACTISE

Implications for future research

As the WAIS and Rorschach are commonly used in clinical settings, an important point to consider is the extent to which the serial effects reported in the present study are active for psychiatric patients. While this question remains open to investigation, Bondy (1971) has suggested that the experimental effect will be enhanced as the degree of personality pathology increases.

Related to this question is the possibility of differential serial effects according to the nature of the personality pathology. For example, do "anxiety neurotics" experience greater interference effects in Rorschach - WAIS administrations than do "simple schizophrenic"? Further research may not only shed light on the matter of serial effects within clinical batteries, but also provide new information on the nature of cognitive processes.

Psychological tests differ in degree of structuredness, the projective techniques being the least structured. The

relationship between intra-battery serial effects and the degree of structuredness of psychological tests could be investigated by conducting experiments similar to the present one, comparing tests of varying degrees of structuredness.

Implications for practise

While the results of this study afford theoretical implications, it is hoped that practising psychologists and clinicians can expecially benefit from them. The theoretical rationale for hypothesizing that test interference may occur is based on the nature of the tests themselves and the thought processes involved in the production of responses in the test situation. But the demonstration of the existence of test interference is clear, and the obvious forthcoming recommendation is that a WAIS should precede the Rorschach in the interest of minimizing the confounding effects of the order of presentation.

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APPENDICES

APPENDIX A

Administration Instructions for the Associative and Inquiry Phases of the Rorschach

Instructions for the Associative phase of the Rorschach:

> "Just let me take a moment to make sure these cards are in order. Yes. Now I will show you these one at a time. It will be your task to tell me what it looks like. Here is the first one."

Instructions for the Inquiry phase of the Rorschach:

> "Now I will show you these again. On this one you said ... (examiner reads subject's response *ver batim*) .... Can you tell me where you saw that? Can you tell me what it was that suggested that to you?"

APPENDIX B

The Verbal Questionnaire Which Followed Second Test Session

Question 1:

> "Since the last time I saw you (four months ago), can you think of any important event in your life that may have resulted in a significant change in your personality? I have in mind, for example, the recent death of someone close to you or, perhaps, a change in marital status."

Question 2:

> "Can you tell me what change you think this event has caused in your personality?"

APPENDIX C

Instructions to Subjects at End of First Test Session

Instructions to subjects at end of first test session:

> "It is very important to the success of this experiment that you not discuss the nature or content of this session with your classmates. Please avoid any conversation related to this interview. I will contact you early in September to arrange a date for our second session in which I will give you other psychological tests. Thankyou very much."

APPENDIX D

Instructions to Subjects

At Beginning of Second Test Session

Instructions to subjects at beginning of second test session:

> "You may notice a similarity between what we will do today and what we did last time. However, the idea of the experiment is *not* to see how closely you can match what you said last time. Please just respond as you feel you would like to at this moment without any consideration as to whether it is the same, or not, as last time."

APPENDIX E

Instructions to Subjects Following Questionnaire at End of Second Test Session

Instructions to subjects following questionnaire at end of second test session:

> "Just like last time, it is again important that you do not discuss with your classmates the nature or content of this session, or at least until they themselves have completed the second session. I will contact the school of nursing to arrange a time, with all of you girls together, to explain the experiment and tell you what the results of it are. Thankyou very much."

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